## WHAT IS CLAIMED IS:

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- 1. An optical glass having a refractive index nd of at least 1.875, an Abbe's number vd of at least 39.5 and a glass transition point Tg of 700°C or lower.
- 2. The optical glass of claim 1, which is a borosilicate glass comprising at least one selected from  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  or  $Yb_2O_3$  and at least one selected from  $ZrO_2$ ,  $Ta_2O_5$  or  $Nb_2O_5$ , wherein the weight ratio of the total content of  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  and  $Yb_2O_3$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 2 to 4 and the weight ratio of the total content of  $ZrO_2$ ,  $Ta_2O_5$  and  $Nb_2O_5$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 1 to 2.
- 3. The optical glass of claim 2, which further contains ZnO whose weight ratio to the total content of  $SiO_2$  and  $B_2O_3$  is more than 0 but not more than 2.
- 4. The optical glass of claim 3, wherein the weight ratio of the total content of  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  and  $Yb_2O_3$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 2 to 4, the weight ratio of the total content of  $ZrO_2$ ,  $Ta_2O_5$  and  $Nb_2O_5$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 1 to 2 and the weight ratio of  $ZnO_2$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 0.1 to 0.5.
- 5. The optical glass of claim 1, which has a glass composition comprising, by % by weight, 3 to 10 % of  $SiO_2$ , 7 to 15 % of  $B_2O_3$ , 0 to 5 % of  $GeO_2$ , 0 to 15 % of ZnO, 30 to 60 % of  $La_2O_3$ , 0 to 30 % of  $Gd_2O_3$ , 0 to 10 % of  $Y_2O_3$ , 0 to 5 % of  $Yb_2O_3$ , 2 to 8 % of  $YcO_2$  and 13 to 19 % of  $Ta_2O_5$ , wherein the total content of  $SiO_2$ ,  $B_2O_3$  and  $GeO_2$  is 14 to 20 % by weight, the total content of  $B_2O_3$  and ZnO is at least 9 % by weight, the total content of  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  and  $Yb_2O_3$  is 50 to 60 % by weight and the total content of the above components is at least 95 % and further wherein the composition contains, by % by weight, 0 to 1 % of  $Li_2O$  and 0 to 3 % of  $Nb_2O_5$ .

6. The optical glass of claim 5, which contains, by % by weight, 9 to 12 % of  $B_2O_3$  and 1 to 7 % of ZnO and has a  $B_2O_3$  and ZnO total content of at least 12 % by weight.

The optical glass of claim 5 or 6, which contains, by % by weight, 6 to 9 % of  $SiO_2$ , 9 to 12 % of  $B_2O_3$  and 0 to 5 % of  $GeO_2$  and has an  $SiO_2$ ,  $B_2O_3$  and  $GeO_2$  total content of 16 to 19 % by weight.

The optical glass of claim 1, which has a glass promposition comprising, by % by weight, 5 to 10 % of SiO<sub>2</sub>, 7 to 13 % of B<sub>2</sub>O<sub>3</sub>, 0 to 5 % of GeO<sub>2</sub>, 0 to 15 % of ZnO, 30 to 60 % of La<sub>2</sub>O<sub>3</sub>, 0 to 30 % of Gd<sub>2</sub>O<sub>3</sub>, 0 to 5 % of Y<sub>2</sub>O<sub>3</sub>, 0 to 5 % of Yb<sub>2</sub>O<sub>3</sub>, 2 to 8 % of ZrO<sub>2</sub> and 13 to 19 % of Ta<sub>2</sub>O<sub>5</sub>, wherein the total content of SiO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub> and GeO<sub>2</sub> is 14 to 20 % by weight, the total content of B<sub>2</sub>O<sub>3</sub> and ZnO is at least 9 % by weight and the total content of La<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub> and Yb<sub>2</sub>O<sub>3</sub> is 50 to 60 % by weight, and further wherein the total content of the above components exceeds 95 % by weight, the composition further contains, by % by weight, 0 to 3 % of Nb<sub>2</sub>O<sub>3</sub>, 0 to 3 % of WO<sub>3</sub>, 0 to 3 % of Al<sub>2</sub>O<sub>3</sub>, 0 to 3 % of Bi<sub>2</sub>O<sub>3</sub>, 0 to 3 % of Ga<sub>2</sub>O<sub>3</sub> and 0 to 1 % of Sb<sub>2</sub>O<sub>3</sub>, the total content of BaO, SrO, K<sub>2</sub>O and MgO is 0 to 3 % by weight, and the total content of Na<sub>2</sub>O<sub>3</sub>, K<sub>2</sub>O and Li<sub>2</sub>O is 0 to 1 % by weight.

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- 9. An optical glass which is a borosilicate glass comprising at least one selected from  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  or  $Yb_2O_3$  and at least one selected from  $ZrO_2$ ,  $Ta_2O_5$  or  $Nb_2O_5$ , wherein the weight ratio of the total content of  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  and  $Yb_2O_3$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 3.2 to 5 and the weight ratio of the total content of  $ZrO_2$ ,  $Ta_2O_5$  and  $Nb_2O_5$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 1.1 to 1.5, and which has a refractive index nd of at least 1.875 and an Abbe's number vd of at least 39.5.
- 10. An optical glass which is a borosilicate glass comprising at least one selected from  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  or  $Yb_2O_3$ , at least one selected from  $ZrO_2$ ,  $Ta_2O_5$  or  $Nb_2O_5$  and  $ZnO_7$ ,

wherein the weight ratio of the total content of  $La_2O_3$ ,  $Gd_2O_3$ ,  $Y_2O_3$  and  $Yb_2O_3$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 2 to 5, the weight ratio of the total content of  $ZrO_2$ ,  $Ta_2O_5$  and  $Nb_2O_5$  to the total content of  $SiO_2$  and  $B_2O_3$  is from 0.5 to 3 and the weight ratio of  $ZrO_2$  to the total content of  $SiO_2$  and  $B_2O_3$  is at least 0.14, and which has a refractive index nd of at least 1.875 and an Abbe s number vd of at least 39.5.

- 11. The optical glass of claim 9 or 10, which has a glass composition comprising, by % by weight, 3 to 10 % of SiO<sub>2</sub>, 7 to 15 % of B<sub>2</sub>O<sub>3</sub>, 0 to 5 % of GeO<sub>2</sub>, 0 to 15 % of ZnO, 30 to 60 % of La<sub>2</sub>O<sub>3</sub>, 0 to 30 % of Gd<sub>2</sub>O<sub>3</sub>, 0 to 10 % of Y<sub>2</sub>O<sub>3</sub>, 0 to 5 % of Yb<sub>2</sub>O<sub>3</sub>, 2 to 8 % of ZrO<sub>2</sub> and 13 to 19 % of Ta<sub>2</sub>O<sub>5</sub>, wherein the total content of SiO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub> and GeO<sub>2</sub> is 14 to 20 % by weight, the total content of B<sub>2</sub>O<sub>3</sub> and ZnO is at least 9 % by weight and the total content of La<sub>2</sub>O<sub>3</sub>, Gd<sub>2</sub>O<sub>3</sub>, Y<sub>2</sub>O<sub>3</sub> and Yb<sub>2</sub>O<sub>3</sub> is 50 to 60 % by weight, and further wherein the total content of the above components exceeds 95 % by weight and the glass composition contains 0 to 1 % by weight of Li<sub>2</sub>O and 0 to 3 % by weight of Nb<sub>2</sub>O<sub>5</sub>.
  - 12. The optical glass of claim 11, which contains, by % by weight, 9 to 12 % of  $B_2O_3$  and 1 to 7 % of ZnO and has a total content of  $B_2O_3$  and ZnO of at least 12 % by weight.
- The optical glass of claim 11 or 12, which contains, by % by weight, 6 to 9 % of SiO<sub>2</sub>, 9 to 12 % of B<sub>2</sub>O<sub>3</sub> and 0 to 5 % of GeO<sub>2</sub> and has an SiO<sub>2</sub>, B<sub>2</sub>O<sub>3</sub> and GeO<sub>2</sub> total content of 16 to 19 % by weight.

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14. An optical glass comprising, by % by weight, 3 to 10 % of SiO<sub>2</sub>, 7 to 15 % of B<sub>2</sub>O<sub>3</sub>, 30 to 60 % of La<sub>2</sub>O<sub>3</sub>, 2 to 8 % of ZrO<sub>2</sub> and 13 to 19 % of Ta<sub>2</sub>O<sub>5</sub>, wherein the total content of SiO<sub>2</sub> and B<sub>2</sub>O<sub>3</sub> is 14 to 30 % by weight, and the total content of the above components is at least 95 % by weight.

The optical glass of claim 14, wherein part of  $La_2O_3$  is replaced with  $Gd_2O_3$  and/or  $Y_2O_3$ , the content of  $Gd_2O_3$  is 0

to 30 % by weight, the content of  $Y_2O_3$  is 0 to 10 % by weight, the optical glass containing 0 to 15 % by weight of ZnO, and further wherein the total content of ZnO and  $B_2O_3$  is at least 9 % by weight, the optical glass having a glass transition point Tg of 700°C or lower.

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- 16. The optical glass of claim 14, wherein part of  $La_2O_3$  is replaced with  $Gd_2O_3$  and/or  $Y_2O_3$ , the content of  $Gd_2O_3$  is 0 to 30 % by weight, the content of  $Y_2O_3$  is 0 to 10 % by weight, the content of  $Y_2O_3$  is 0 to 10 % by weight, the content of  $Y_2O_3$  is 0 to 3 % by weight and the content of  $Y_2O_3$  is 0 to 3 % by weight and the content of  $Y_2O_3$  is 0 to 3 % by weight and the content of  $Y_2O_3$  is 0 to 3 % by weight and the content of  $Y_2O_3$  is 0 to 10 % by weight, the optical glass having a glass transition point  $Y_2O_3$  or 10 % cor 10 wer.
- 17. A glass preform made of the optical glass recited in claim 1, 9, 10 or 14.
- 18. An optical product made of the optical glass recited in claim 1, 9, 10 or 14.
- 19. A process for the production of the optical product recited in claim 18, which comprises the steps of melting raw materials for a glass and directly press-molding a molten glass.
- 20. The process of claim 19, which further comprises the step of annealing a glass molded material obtained by the press-molding, after the step of directly press-molding a molten glass.
- 21. A process for the production of an optical product, which comprises the steps of softening the glass preform recited in claim 17 under heat and press-molding the glass preform softened under heat.
- 22. The process of claim 21, which further comprises the step of annealing a glass molded material obtained by the press-molding, after the step of press-molding the glass

preform.

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